

Knowledge of Rabies and Wound Care after Animal Bite among Accredited Social Health Activists (ASHA) in Ahmedabad Municipal Corporation (AMC): A Cross-Sectional Study

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Abstract:

Introduction: Rabies is a vaccine preventable disease having 100% fatality. India is endemic for Rabies accounting for 36% of the world's Rabies deaths. ASHAs are the grass root level worker who spreads awareness about Rabies and wound care after animal bite. **Objectives:** 1. To assess the knowledge of Rabies among ASHAs. 2. To assess the knowledge of wound care after animal bite among them. 3. To determine the association of various sociodemographic factors with knowledge of Rabies and wound care after animal bite among ASHA. **Methods:** A cross-sectional study was conducted on 139 ASHAs from Ahmedabad Municipal Corporation selected by stratified random sampling from 86 UPHC from September 2024 to November 2024. A self-administrating questionnaire was used. **Results:** The mean age of ASHAs was 43.8 ± 8.1 years and mean work experience of 11.6 ± 5.8 years. None of them had any prior training in Rabies or wound care. Dog bite (92.1%) was the commonest source recognized by the majority of participants and 82% thought Rabies is fatal. About 97.1% knew about Rabies vaccine, 20% knew the right number of doses. 62.6% believed in traditional remedies for wound care, while 76.3% knew about washing the wound with soap and water. Total knowledge score was most strongly associated with work experience ($p = 0.024$). **Conclusion:** This study identifies lack of knowledge regarding Rabies and appropriate care of wounds following animal bites among ASHA workers in Ahmedabad city suggesting the need for training.

Keywords: Ahmedabad, ASHA workers, Rabies

Introduction:

Rabies remains a significant public health challenge with the disease maintaining a fatality rate of almost 100% once symptoms appear, despite being vaccine-preventable. India currently is considered a global hotspot for the disease. India contributes about 36% to the world's total Rabies-related deaths (18,000-20,000

annually).^[1] According to the National Rabies Control Program, dog bites account for a staggering 96% of these cases, while other local wildlife like monkeys, mongoose, jackals, and cats act as important viral reservoirs. The Program was initiated in five pilot cities including Ahmedabad. This initiative intended to prevent human deaths by enhancing awareness among

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Chandra V, Puwar B, Patel V, Patel B, Solanki B. Knowledge of Rabies and Wound Care after Animal Bite among Accredited Social Health Activists (ASHA) in Ahmedabad Municipal Corporation (AMC): A Cross-Sectional Study. Healthline. 2025;16 (4): 332-338
	DOI : 10.51957/Healthline_799_2025	

Received : 07-10-2025

Accepted : 08-01-2026

Published : 10-01-2026

the public, training medical personnel, and enhancing both diagnostic and surveillance infrastructures. The aforementioned activities were a part of the more comprehensive “One Health” approach specified in the National Action Plan for Dog Mediated Rabies Elimination from India (NAPRE) with goals to achieve a “Zero by 2030” global mortality burden.^[2]

According to the National Urban Health Mission, ASHAs are the nodal contact for 1,000–2,500 resident of urban slum areas.^[3] The ASHAs as grassroot healthcare workers provides information on wound care and post-exposure prophylaxis, including soap-and-water washing of the wound site. They also help refer cases to a vaccination site and promote immunization of pet animals.^[4]

Although ASHA workers also play a role in control of zoonotic diseases in cities like Ahmedabad, studies that assess the true level of their knowledge concerning Rabies are limited.^[5] Thus, it is important that ASHA workers have adequate knowledge about Rabies and wound care after animal bite which will increase awareness in the community and help in prevention of the Rabies at large.

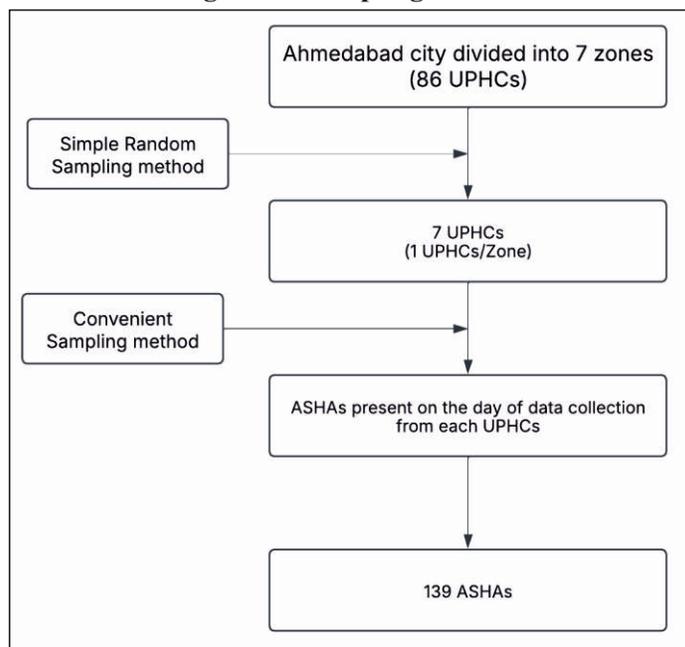
So, this study was conducted with the purpose to assess the knowledge of Rabies among ASHAs, to assess the knowledge of wound care after animal bite among them and to determine the association of various sociodemographic factors with knowledge of Rabies and wound care after animal bite among ASHA.

Methods:

It was an observational cross-sectional study done in Urban Primary Health Centers (UPHCs) of Ahmedabad Municipal Corporation (AMC). Ahmedabad city is divided into seven-zones that include a total of 86 UPHCs. Multi-stage sampling method was applied and one UPHC from each zone was randomly selected through lottery method. Thus, seven UPHCs were included in the study. All the existing Accredited Social Health Activists (ASHAs) from these selected UPHCs were studied from September 2024 through November 2024 (3 months).

Sample size: Total 139 ASHAs were included from the selected 7 UPHCs by convenient sampling method. (Figure 1)

Figure 1 : Sampling Method



Inclusion criteria: ASHAs from selected UPHCs of Ahmedabad Municipal Corporation.

Exclusion criteria: ASHAs not willing to participate in the study. ASHAs absent on the day of data collection.

Study Tool: A self-administrating semi structured questionnaire in English and Gujarati was prepared using Training Module for ASHAs (July 2006) by Ministry of Health and Family Welfare.^[4] The questionnaire consisted of demographic details and questions to assess the knowledge on Rabies and wound care after animal bite. The questionnaire included 33 items, and each correct response was scored as one and incorrect or “don’t know” was scored as zero. The total questions for knowledge about Rabies including sub-sections were 17, for knowledge about vaccination were 7 and for knowledge about wound care after animal bite were 9. Thus, the total knowledge score ranged from 0 to 33. The questionnaire was validated by a panel of experts from Community Medicine, and mean score was used as cut-off for analysis as per their recommendation.

Ethical Consideration: The permission of the Medical Officer of Health of Ahmedabad Municipal Corporation was obtained to conduct this study. Ethical clearance was obtained for the study (No. NHLIRB/2024/09/25/No-10). Written informed consent was taken from ASHAs before filling the questionnaire. Data confidentiality was maintained.

Data Analysis: Analysis was conducted using descriptive statistics. Sociodemographic variables such as age, education, and work experience were considered as exposure variables and the total score of knowledge regarding Rabies and wound management with a maximum score of 33 was considered as the outcome variable. The data was normally distributed so independent t-test was used to compare the mean of total knowledge score between variables. All computations were carried out with a sample size of 139 participants using SPSS software version 20.0.

Results:

A total of 139 ASHAs from 7 zones of Ahmedabad city participated in the study. The mean age of the participants was 43.82 years with a standard deviation of 8.07, ranging from 25 to 63 years. The mean duration of work experience was 11.64 years with a standard deviation of 5.80, ranging from 3 months to 21 years. None of the ASHAs had received any training regarding Rabies or the management of wounds following animal bites (Table 1).

Multiple responses were recorded about transmission of Rabies in which majority 128(92.1%) of ASHAs believed that Rabies is transmitted through dog bite followed by monkey bite 31(22.3%). About 48(34.5%) ASHA believed that Rabies could spread through licks and scratch from the rabid animal. 114(82%) ASHAs knew that death is inevitable in case of Rabies. For identifying Rabid animal, response of majority 107(77%) of ASHAs was salivation of animal followed by 59(42.4%) animal keeps biting and 29(20.9%) increase in aggression of animal (Table 2).

Table 1: Socio demographic details of the participants (N=139)

Variable	N	%
Age (years)		
Under 25	1	0.7
26-35	24	17.3
36-45	53	38.1
46-55	53	38.1
56 and above	8	5.8
Educational Status		
Secondary	53	38.1
Higher secondary	47	33.8
Graduate	36	25.9
Postgraduate	3	2.2
Work Experience (years)		
1-5	23	16.5
6-10	34	24.4
11-15	47	33.8
16-20	30	21.6
More than 20	5	3.6

Table 2: Knowledge about Rabies among ASHA workers (N=139)

Variable	N	%
How is Rabies transmitted?*		
Dog bite	128	92.1
Monkey bite	31	22.3
Cat bite	22	15.8
Wild animals	19	13.7
Rodent bite	13	9.4
Don't know	7	5
Others	1	0.7
Does Rabies spread from human to human?		
Yes	60	43.2
No	66	47.5
Don't know	13	9.4
Does Rabies spread through licks/scratches from a rabid animal?		
Yes	48	34.5
No	79	56.8
Don't know	12	8.6
Does Rabies spread through contaminated food or water?		
Yes	13	9.4
No	118	84.9
Don't know	8	5.8
Is death inevitable in case of Rabies?		
Yes	114	82
No	18	12.9
Don't know	7	5
Rabid animal is likely to die within how many days?		
<10 days	33	23.7
10 days	3	2.2
>10 days	53	38.1
Don't know	50	36
Is Rabies a preventable disease?		
Yes	108	77.7
No	21	15.1
Don't know	10	7.2
How do you identify a Rabid animal?*		
Salivating	107	77
Keep biting	59	42.4
Aggressive	29	20.9
Hydrophobic	16	11.5
Dumb	6	4.3
Don't know	6	4.3
If biting animal is not seen around, would the wound be considered infected with Rabies?		
Yes	51	36.7
No	36	25.9
Don't know	52	37.4

*Multiple responses

Table 3: Knowledge about vaccination of Rabies (N=139)

Variable	N	%
Is there a vaccine for Rabies? (n=139)		
Yes	135	97.1
No	2	1.4
Don't know	2	1.4
How early should Anti-Rabies Vaccine be given? (n=135)		
Immediately	119	88.1
≤ 1 day	12	8.8
≤ 1 Week	3	2.2
Anytime	0	0
Don't know	1	0.7
Are you aware of the schedule of the Anti-Rabies Vaccine? (n=135)		
Yes	90	66.7
No	49	36.3
Does ARV protection stays for lifetime? (n=135)		
Yes	40	29.6
No	76	56.2
Don't know	19	14
If no, when to repeat the vaccine after animal bite? (n=76)		
< 1 Year	29	38.1
≥ 1 Year	21	27.6
Don't know	28	36.8

Significant number of ASHAs 135 (97.1%) knew that there is a vaccine for Rabies. Out of 135 ASHAs knowing that Anti Rabies Vaccine (ARV) is available 119 (88.1%) said that vaccine should be provided to the animal bite victim immediately. A schedule is available for the ARV was known by 90 (66.7%) of study participants, out of which only 25 (20%) knew that the current ARV schedule included four doses. Out of which correct days of the doses i.e., 0,3,7,28 was known by 5 (20%) of ASHAs. The knowledge about when to give immunoglobulin was present in 4 (29.6%) ASHAs. Furthermore, 76 (56.2%) participants reported that the anti-rabies vaccine does not confer lifelong protection, and only one-fifth of the participants, 29 (38.1%), knew when the vaccine should be repeated following a subsequent animal bite (Table 3).

Table 4: Knowledge about wound care after animal bite (N=139)

Variable	N	%
Is traditional treatment useful?		
Yes	87	62.6
No	42	30.2
Don't know	10	7.2
If yes, things which can be applied to a wound after an animal bite.*		
Turmeric	53	37.4
Tobacco	35	25.2
Chilli powder	20	14.4
Toothpaste	3	2.2
Others	1	0.7
Is washing wound with soap and water useful?		
Yes	106	76.3
No	28	20.1
Don't know	5	3.6
If yes, how long the wound should be washed?		
>10-15 min	18	16.9
<10-15 min	74	69.8
Don't know	14	13.2
Is application of antiseptics useful in animal bite wound care?		
Yes	68	48.9
No	40	28.8
Don't know	31	22.3
Should one suture the animal bite wound?		
Yes	40	28.8
No	75	54
Don't know	24	17.3
Should one apply loose dressing to the wound?		
Yes	81	58.3
No	46	33.1
Don't know	12	8.6

*Multiple responses

Table 5: Association of Sociodemographic Factors with Knowledge of Rabies and Wound Care After Animal Bite (N = 139)

Variable	n (%)	Knowledge Score			t value	p value
		Mean	SD	SEM		
Age (years)						
<43	62 (44.6)	14.5	4.7	0.6	1.081	0.282
≥43	77 (55.4)	15.3	4.1	0.4		
Educational status						
Secondary	53 (38.1)	14.9	4.1	0.5	-0.145	0.885
>Secondary	86 (61.8)	15	4.5	0.5		
Work experience(years)						
≥11	82 (59.0)	15.6	4.9	0.5	2.285	0.024
<11	57 (41.0)	13.9	4.1	0.5		

Note: Independent samples t-test was applied.

More than half of ASHAs (62.6%) believed that the traditional treatment for the wound care after animal bite is useful. All (62.6%) ASHAs who believed that traditional treatment was useful were further asked about substances applied to animal bite wounds. Multiple responses were recorded, with turmeric being the most commonly reported (37.4%), followed by tobacco (25.2%) and chilli powder (14.4%).

There is statistically significant difference between work experience and knowledge of Rabies and wound care after animal bite (p=0.024) which suggests the work experience of ASHAs increases the knowledge about Rabies and wound care after animal bite also increases. However, there was no statistically significant association between age and the knowledge scores, and educational status and the knowledge scores of ASHA workers.(Table 5)

Discussion:

ASHA workers are the first line of contact for health illnesses in the community. They are the most frequent visitors among health workers in households.^[5] This vital link between the health system and the community is very important to fight against this preventable yet deadliest disease. This study involved 139 ASHA workers from Ahmedabad city; and none of the ASHAs had received any formal training. A study done by Aptriana CD et al.^[8] showed that on implementation of

One health approach for Rabies and training of health workers helped in decreasing the case fatality rate from 6.25% in 2014 to zero in 2019. However, when training was not repeated in new workers in 2020 Rabies cases increased to 1.75 per million population and increased death due to Rabies by 0.84%. Thus, it is found that regular training programs are helpful in the progress toward Rabies elimination goals.

In present study, regarding knowledge about transmission of Rabies, majority of ASHA workers (92.1%) recognized that dog is the major transmitter of Rabies, only a few believed that Rabies can also spread by cats, monkeys and wild animals. A study conducted by Sahu DP et al.^[9] showed the similar results. Additionally, in present study, only 34.5% of ASHAs believed that Rabies can spread through licks/ scratches of animal whereas a study conducted by Tiwari HK et al.^[10], found that 54% of the health workers thought Rabies can spread with licks/ scratches from an animal.

In present study, awareness regarding existence of Rabies vaccine was present in 97.1% of ASHAs; and 88.1% had the knowledge about its immediate administration. However, detailed understanding of the vaccine schedule, number and timing of doses, and the role of immunoglobulin was poor. Similar results in knowledge related to Rabies vaccination among health workers were observed in study conducted in Baramati by Tiwari HK et al.^[10] and by Sahu DP et al.^[9] This may affect referral and counselling for animal bite.

Total 62.6% of ASHAs in this study believed traditional treatment for wound care after animal bite with turmeric, tobacco and chilli powder is useful. In contrast to these findings, a study conducted among para medical staff by Tiwari HK. et al.^[10] found 96% of the health workers didn't think traditional treatment is useful in Rabies. These differences are because Para-medical staff are involved in clinical management of Rabies, while ASHAs are more exposed to community beliefs

and lack of training program contribute to these misconceptions leading to delay in appropriate medical care.

Majority of ASHAs (76.3%) in present study were aware that the wound should be washed with soap and water but didn't know how long. A similar result was found in a study by Kapoor P et al.^[11] and Kamat U et al.^[12] that 56.07% and 54.5% of health workers respectively knew that the practice of wound washing with soap and water is beneficial in Rabies treatment.

There was statistically significant association between work experience and knowledge of Rabies and wound care after animal bite in present study. This finding was supported in the study by Tiwari HK et al.^[10] among health workers.

Recommendations:

Regular training and retraining of ASHAs especially focusing on Rabies and wound care after animal bite will improve Rabies control in the community and support national elimination strategies through NAPRE.

Limitations:

Present study included only ASHA workers from urban areas and not from rural areas. Convenient sampling method was used to select ASHA workers.

Conclusion:

The findings of the study indicates that with increased work experience among ASHA workers, their knowledge regarding Rabies was found to be better. However, overall mean knowledge score indicates deficiencies in understanding of Rabies prevention and appropriate wound care after animal bite.

Acknowledgement:

We would like to thank all the ASHA workers for being the part of this study and selected UPHCs for being positive and supportive. We would also like to thank Ahmedabad Municipal Corporation for giving me opportunity and granting me permission to conduct this study.

Declaration :

Funding: Nil

Conflict of Interest: Nil

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